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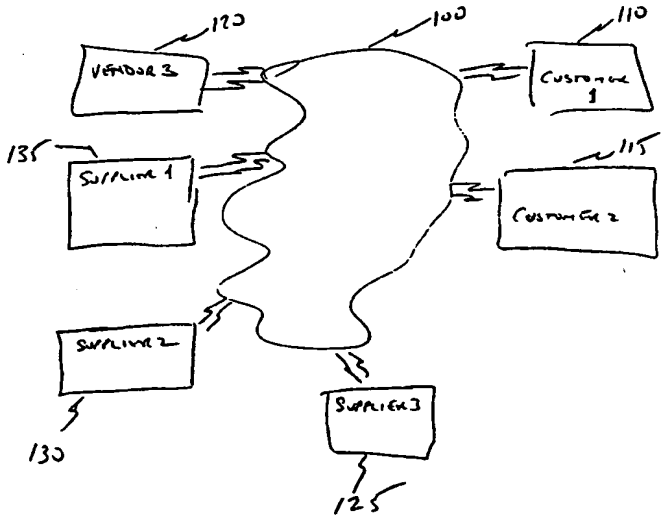

(57) Abstract: A method for generating a customer standardized shipping label by providing printing instructions to a plurality of suppliers is presented. In accordance with the principles of the invention, a customer places orders at a remote location that are accessible by customer suppliers. Further inlcuded at the remoter location is a customer specified shipping label, which is to be used by suppliers that are providing goods to the customer. The shipping label is provided to each supplier in the form of printer instructions that are specific for the type of printing device that is used by the supplier. The printing instructions enable a supplier's printer device to print the fixed indica and variable data of the shipping label without accessing the printer driver software programs. Further, variable information items are also downloaded from the remote location and included in the printed shipping label.

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METHOD AND SYSTEM TO GENERATE CUSTOMER SUPPLIED LABELS TO A PLURALITY OF SUPPLIERS

FIELD OF THE INVENTION

The present invention relates to printing shipping labels, more particularly, to supplying labeling instructions and formats necessary to print shipping labels to a plurality of suppliers.

BACKGROUND

Supply chain management is the oversight of materials and information as they move in a process among the participating organizations of a supply chain, i.e., manufacturer, customer, supplier, consumer, etc. Coordinating and integrating material and information flow among the participating organizations is a critical element of supply chain management.

In ordering goods and supplies from suppliers, customers typically prepare purchase orders that specify the type and quantity of material to be purchased. Additional information items, such as ship-to address, can be included in the customer's purchase order. The suppliers in fulfilling the terms of the purchase order prepare labels that are used to address the packages containing the goods or supplies for shipment. These shipping labels can also include information concerning the contents of the package. The customer, upon receiving the shipped package, must then correlate the received package with the original purchase order to insure proper fulfillment of the

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terms of the purchase order. However, as each supplier independently prepares their shipping labels, the form and content of the label received from each supplier can be markedly different. The customer is thus burdened to expend significant time and resources in correlating the original purchase order with packages received from different suppliers.

To overcome this burden on the customer, the customer can impose that the suppliers provide a shipping label in a specific format, which provides customer related information on the shipping label. However, this solution merely shifts the burden of conformity onto the supplier. In this case, the supplier must necessarily comply with a host of different formats, one for each different customer, in order to satisfy customers' labeling requirements or lose these same valuable customers. Further, as a customer changes the receiving system to better track goods and supply movement, additional information items that are added to the shipping label must be incorporated into the suppliers' label printing process. Hence, the suppliers are additionally burdened to comply with customer changed labeling requirements.

Hence, there is a need for customers to dynamically provide suppliers with instructions with regard to format, style and content in printing shipping labels in order to produce a shipping label that is compliant with a customer's receiving system processing.

SUMMARY OF THE INVENTION

A method and system are presented that enables a plurality of customers to provide printing instructions to a plurality of suppliers that enable each supplier to print

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shipping labels used for shipping materials and goods from the supplier in a format that is consistent, and in compliance, with the customer's requirements. In accordance with the method of the invention, when a supplier undertakes to fulfill an order placed by a customer, the customer provides instructions to the supplier for printing a label on the supplier's printers. The instructions, which are customized for the supplier's printers direct the printer to produce a label indicium compliant with the customer's labeling requirements. Hence, the supplier is not burdened with maintaining a host of different customer formats or of preloading printers with customer specific label material.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

Figure 1 illustrates an exemplary network configuration;

Figure 2 illustrates an exemplary shipping label;

Figure 3 illustrates an exemplary network configuration in accordance with the principles of the invention;

Figure 4 illustrates a flow chart of an exemplary processing in accordance with the principles of the invention; and

Figure 5 illustrates a shipping label provided in accordance with the principles of the invention.

It is to be understood that these drawings are solely for purposes of illustrating the concepts of the invention and are not intended as a definition of the limits of the invention. It will be appreciated that the same reference numerals, possibly

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supplemented with reference characters where appropriate, have been used throughout to identify corresponding parts.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 illustrates an exemplary network of customers and suppliers, wherein each customer can purchase goods from selective suppliers and each supplier can provide goods to selective customers or to other suppliers. In this illustrative example, customers 110, 115 and 120 are in communication with suppliers 125, 130 and 135 over a communication network 100, e.g., a telephone network, or the Internet. As would be appreciated, customers can purchase goods from a plurality of suppliers. Hence, customer 110, for example, may order one type of goods or supplies from supplier 125 and a second type of goods and supplies from both supplier 130 and supplier 135. Supplier 135, for example, may supply an amount of a second type of good that supplier 130 cannot supply.

Figure 2 depicts an exemplary customer required shipping label format. Using this illustrated format, a supplier is required to prepare shipping label 200 in accordance with the customer's instructions. As illustrated, label 200 includes fixed regions, such as horizontal line 215 and vertical line 217 and variable information items such as the supplier address 210 and the customer shipping address 220. Additionally, information items under the control of the supplier can be included on label 200. For example, an indication of package number and the number of packages in shipment 230, number of pieces in package 250, the date of shipment 290, the postage 310 and the package weight

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300, may be included on shipping label 200. These items aid the supplier and customer in tracking the shipment. Furtherstill, customer supplied information items, such as, purchase order number 240, customer serial number 260 and customer designation 270, etc. can be included on label 200. In this illustrative example, the customer required shipping label thus provides the customer with sufficient information to correlate the packages of a received shipment with a purchase order. As would be appreciated, the correlation of the received packages with a purchase order allows a customer to monitor and track shipment, even when the packages are received at remotely located receiving site. However, the inclusion of customer related information items on shipping label 200 requires the supplier to record and maintain information items that are related to the customer's business operation and not the supplier's business operation.

Figure 3 illustrates a network configuration in accordance with the principles of the invention. In this network configuration, customer 110 is in communication with a host processing system 320, such as a computer system that includes a data base storage system. Included in host system 320 are processing systems that enable customer 110 the capability to create and store information items for the purchase of goods or supplies. The information items may be stored under a customer related category, such as purchase order number. In accordance with the principles of the invention, the purchase order information, rather than being relayed directly to supplier 125, is routed to second hosting system 340 for storage. The routing is accomplished through a web adapter 330, which posts to one hosting system 340, designated as a web server . The information items and the purchase order number, for example, may then be relayed from hosting

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system 340 to supplier 125 to notify supplier 125 of new orders. In the case that the communication network is the Internet, second hosting system 340 is comparable to a web server system that enables a plurality of users to access the data stored thereon. In this case, the purchase order information items hosted on web server 340 may be accessible by selected suppliers for viewing new or open purchase orders.

Supplier 125, for example using the Internet, can periodically view stored purchase orders in order to bid on new or fill open purchase orders. In the alternative, web server 340 can inform selected suppliers when new purchase orders have been posted by sending an indication, such as an electronic-mail message, to customer selected suppliers. In this case, supplier 125 can then select at least one open purchase order from a list of purchase orders or, in the alternative, select at least one line item from a purchase order. Web server 340 having knowledge of the supplier's printers, then provides printer specific instructions to browser 345 used by supplier 125. Browser 345, using the printer specific instructions is then capable of printing the shipping label, form, style and content, in a manner that is compliant with the customer's requirements.

Figure 4 illustrates an exemplary processing 400 preformed at web server 340 in processing a request from supplier 125. In this exemplary processing, after supplier 125 accesses web host 340, a search is made, at block 405, for those customers registered with supplier 125 and which supplier 125 is approved to bid on or fill open purchase orders. Supplier 125 may select a customer and view a list of purchase orders associated with the selected customer, at block 410. Supplier 125 may then request, at block 415, that web server 340 display open purchase order header information. Supplier 125

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selects one purchase order, at block 420, and receives, at block 425, detailed information associated with the selected purchase order. In those cases in which the purchase order includes multiple line items, supplier 125 can, at block 435, select individual line items within the purchase order information.

After selected purchase order(s) or purchase order lines items have been confirmed, web server 340 then determines whether packing, or shipping information, is associated with the selected items. If packing or shipping information is available, then supplier 125 printer information is made available to web server 340. For example, supplier 125 may be directed to provide the location and type of printer to be used in printing the customer compliant labels, or the location and type of printer information may be stored on web server 340. Furtherstill, supplier 125 may change a previously stored printer location and type to reflect new or different printer hardware available at the facility of supplier 125.

A determination is then made, at block 450, as to whether the print instructions for the type of printer used by supplier 125 have been provided to supplier 125. If the determination is in the negative, then web server 340, at block 460, downloads, i.e., provides, through the supplier's Internet Explorer or Netscape Explorer browser print instructions so the designated printer may properly interpret label data with regard to form, style and content of the label. A software package is also downloaded. The software package, being resident on the supplier's computing system, merges, at block 470, the print instructions and variable data items and places the resultant merged document in the selected supplier's printer queue. Thus, the supplier's system uses the

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print instructions to correctly print the fixed portions of the label, *i.e.*, indicium, and the variable portions that contain variable content data without using the printer's own driver program software. The selected printer is then directed to print, at block 475, the label indicium and the variable label content, which was downloaded, at block 465.

If the determination of printer is positive, then the label content (variable data) that is associated with the selected purchase order or line item is then downloaded to the supplier's computing system, at block 465. The supplier's computer system, using the previously loaded software program, then merges the label content data with the previously loaded indicium, at block 470. The merged data is then directed to the selected printer, which prints the label indicium (fixed regions) and the variable information item label content without using the printer's own software driver programs.

Figure 5 illustrates an exemplary shipping label 500 printed in accordance with the principles of the invention. In this example, shipping label information content, i.e., variable data, such as, customer part number 510, shipping address 520, purchase order number 550, special identification 560, customer part name 570 are downloaded from web server 340 when supplier 125 selects an associated purchase order. Further, web server 340 provides the printer instructions to print the fixed portions (i.e., regions) of the customer label. For example, instructions concerning printing the thickness, length and starting location of vertical lines, such as line 610 and horizontal line, such as horizontal line 615, are, or were previously, downloaded from web server 340 to the designated printer. Similarly, instructions concerning printing the fixed label designations (regions), such as "PART # CUST (P)" 620 and "SHIP TO" 630 are, or were previously, download

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from web server 340. Hence, the customer provides to the supplier all the information necessary to comply with a customer's standardized labeling without burdening the supplier with a plurality of different forms, styles and formats. It is further advantageous in providing printing instructions on web server 340, as customers may modify the shipping label image, add new information to the shipping label, and change the designation of label fields without causing any changes in the suppliers' processing or processes.

Table 1 illustrates the printing instructions necessary to create label 500 on a Zebra 160 printer.

```
^XA^SZ2~TAO~JSN^MDO^LTO^MFN,N^JZY^PR4,4,4^PMN^JMA^LHO,O^XZ
^XA^LRN^XZ
^XA^FO56,739^BY2,3.0^B3B,N,102,N,Y^FDPOBOPOOOOEO^FS
^FO24,802^AOB,39,53^FDOBOPOOOOEO^FS
^FO176,15^GBO,1203,2^FS
^FO379,22^GBO,1196,2^FS
^FO582,22^GBO,1196,2^FS
^FO0,608^GB177,0,2^FS
^FO177,710^GB203,0,2^FS
^FO177,541^GB203,0,2^FS
^FO380,583^GB396,0,2^FS
^FO583,405^GB193,0,2^FS
^FO1,1070^AOB,22,30^FDCUST (P)^FS
^FO4,486^AOB,22,30^FDSHIP TO^FS
^FO30,148^AOB,28,38^FD<B>SHIP_TO_NAME<E>^FS
^FO66,155^A0B,28,38^FD<B>SHIP_TO_ADD1<E>^FS
^FO104,157^AOB,28,38^FD<B>SHIP TO ADD2<E>^FS
^FO142,169^AOB,28,38^FD<B>SHIP_TO_CITY<E>^FS
^FO192,1060^AOB,22,30^FDQUANTITY^FS
^FO217,1157^AOB,22,30^FD(Q)^FS
^FO256,771^B3B,N,102,N,Y^FDQOBOQTYOEO^FS
^FO223,836^AOB,39,53^FDOBOQTYOEO^FS
^FO354,438^AOB,22,30^FDP.O. (K)^FS
^FO207,75^B3B,N,102,N,N^FDKOBOPOOOOEO^FS
^FO314,144^AOB,39,53^FDOBOPOOOOEO^FS
^FO377,595^GBO,623,6^FS
^FO387,1081^AOB,22,30^FDSPLR ID^FS
^FO410,997^AOB,22,30^FDCUST ASGN (V)^FS
^FO395,400^AOB,22,30^FDPART NAME^FS
^FO470,611^B3B,N,91,N,Y^FDVOBOSHIPMENTOEO^FS
^FO438,683^AOB,39,53^FDOBOSHIPMENTOEO^FS
^FO598,1008^AOB,22,30^FDPKG ID-UNIT^FS ^FO623,1143^AOB,22,30^FD(3S)^FS
^FO671,645^B3B,N,91,N,Y^FD3S0BOSERIALOEO^FS
^FO639,753^AOB,39,53^FDOBOSERIALOEO^FS
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^FO447,143^AOB,28,38^FD<B>PartDesc1<E>^FS
^FO488,143^AOB,28,38^FD<B>PartDesc2<E>^FS ^FO600,408^AOB,22,30^FDDATE MFG.^FS ^FO661,438^AOB,28,19^FD<B>Date<E>^FS
^FO590,248^AOB,22,30^FDSHIP FROM^FS
^FO626,30^AOB,22,30^FD<B>SHIP FR NAME<E>^FS
^FO663,36^AOB,22,30^FD<B>SHIP_FR_ADD1<E>^FS
^FO704,47^AOB,22,30^FD<B>SHIP_FR_CITY<E>^FS
^FO742,39^AOB,22,30^FD<B>SHIP_FR_PH #<E>^FS
^FO258, 571 ^AOB, 33, 20^FD<B>A<E>^PQ1,O, 1, Y^XZ

TABLE 1

Table 2 illustrates the printing instructions necessary to create label 500 on a Intermac 3400B printer.

<STX>R<ETX>
<STX><ESC>C<SI>I7<ETX>
<STX><ESC>P;E3;F3<ETX>
<STX>B1;fO;o66,70;cO,6;w2;hl02;rl;d3,POB0POOOOEO<ETX>
<STX>H2;fO;o147,31;c25;bO;k14;d3,OBOPOOOOEO<ETX>
<STX>L3;fO;oO,190;11203;w2<ETX>
<STX>L4;fO;oO,393;11196;w2<ETX>
<STX>L5;fO;oO,596;11196;w2<ETX>
<STX>L6;fl;o608,191;1191;w2<ETX>
<STX>L7;fl;o506,394;1203;w2<ETX>
<STX>L8;f1;o675,394;1203;w2<ETX>
<STX>L9;fl;o633,789;1395;w2<ETX>
<STX>Ll0;fl;o811,789;1192;w2<ETX>
<STX>Hll;fO;o-1,-1;c20;bO;hl;wl;d3,<ETX>
<STX>H12;fO;o34,10;c20;bO;hl;wl;d3,CUST (P)<ETX>
<STX>H13;fO;o626,13;c20;bO;hl;wl;d3,SHIP TO<ETX>
<STX>H14;fO;o625,39;c33;bO;hl;wl;d3,<SUB><B<SUB»SHIP_TO_NAME<SUB><E<SUB»<ETX>
<STX>H15;fO;o625,74;c33;bO;hl;wl;d3,<SUB><B<SUB»SHIP_TO_ADD1<SUB><E<USB><<ETX>
<STX>H16;fO;o623,112;c33;bO;hl;wl;d3,<SUB><B<SUB»SHIP TO ADD2<SUB><E<SUB»<ETX>
<STX>H17;fO;o625,150;c33;bO;hl;wl;d3,<SUB><B<SUB»SHIP TO CITY<SUB><E<SUB»<ETX>
<STX>H18;fO;o25,201;c20;bO;hl;wl;d3,QUANTITY<ETX>
<STX>H19;fO;o25,226;c20;bO;hl;wl;d3, (Q)<ETX>
<STX>820;fO;o66,270;cO,6;w2;hl02;rl;d3,QOBOQTYOEO<ETX>
<STX>H21;fO;o167,220;c34;bO;hl;wl;d3,O80QTYOEO<ETX>
<STX>H22;fO;o681,363;c20;bO;hl;wl;d3,P.O. (K)<ETX>
<STX>823;fO;o730,221;cO,6;w2;hl02;rl;d3,KOBOPOOOOEO<ETX>
<STX>H24;fO;o817,321;c25;bO;k14;d3,O80POOOOEO<ETX>
<STX>L25;fO;oO,391;1623;w6<ETX>
<STX>H26;fO;o31,396;c20;bO;hl;wl;d3,SPLR ID<ETX>
<STX>H27;fO;o26,419;c20;bO;hl;wl;d3,CUST ASGN (V)<ETX>
<STX>H28;fO;o661,404;c20;bO;hl;wl;d3,PART NAME<ETX>
<STX>B29;fO;o66,484;cO,6;w2;h91;rl;d3,VOB0SHIPMENTOEO<ETX>

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<STX>H30;fO;o169,445;c25;bO;k14;d3,0B0SHIPMENTOEO<ETX>
<STX>H31;fO;o26,607;c20;bO;hl;wl;d3,PKG ID-UNIT<ETX>
<STX>H32;fO;o25,632;c20;bO;hl;wl;d3, (3S)<ETX>
<STX>B33;fO;o64,685;cO,6;w2;h91;rl;d3,3S0B0SERIALOEO<ETX>
<STX>H34;fO;o145,646;c25;bO;k14;d3,OB0SERIALOEO<ETX>
<STX>H35;fO;o722,455;c33;bO;hl;wl;d3,<SUB><B<SUB»PartDescl<SUB><E<SUB»
<ETX>
<STX>H36;fO;o722,496;c33;bO;hl;wl;d3,<SUB><B<SUB»PartDesc2<SUB><E<SUB»
<ETX>
<STX>H37;fO;o664,609;c20;bO;hl;wl;d3,DATE MFG.<ETX>
<STX>H38;fO;o642,669;c33;bO;hl;wl;d3,<SUB><B<SUB»Date<SUB><E<SUB»<ET
X> <STX>H39;fO;o821,599;c20;bO;hl;wl;d3,SHIP FROM<ETX>
<STX>H40;fO;o819,635;c31;bO;hl;wl;d3,<SUB><B<SUB»SHIP FR NAME<SUB><E
<SUB»<ETX>

<STX>H41;fO;o819,672;c31;bO;hl;wl;d3,<SUB><B<SUB»SHIP FR ADD1<SUB><E

<SUB»<ETX>

<STX>H42;fO;o819,713;c31;bO;hl;wl;d3,<SUB><B<SUB»SHIP FR CITY<SUB><E

<SUB»<ETX>

<STX>H43;fO;o819,751;c31;bO;hl;wl;d3,<SUB><B<SUB»SHIP FR PH #<SUB><E

<SUB»<ETX>

<STX>H44;fO;o524,267;c34;bO;hl;wl;d3,<SUB><B<SUB»A<SUB><E<SUB»<ETX>
<STX>DO<ETX>

<STX>R<ETX>
<STX><ESC>E3,1<CAN><ETX>
<STX><RS>1<US>1<ETB><ETX>
<STX><ESC>P;E3<ETX>
<STX>R<ETX>

TABLE 2

As would be appreciated, the printing instructions vary with different printers, hence, when a supplier adds or changes a printer, new printing instructions are needed for the proper printing of a customer's shipping label.

While there have been shown and described and pointed out fundamental novel features of the present invention as applied to preferred embodiments thereof, it will be understood that various omissions and substitutions and changes in the methods described and in the form and details of the devices disclosed, and in their operation, may be made by those skilled in the art without departing from the spirit of the present invention. For example, it is expressly intended that all combinations of those elements

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and/or method steps which perform substantially the same function is substantially the same way to achieve the same results are within the scope of the invention. Substitutions of elements from one described embodiment to another are also fully intended and contemplated.

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I Claim:

1. A method to enable a customer to dynamically provide a plurality of suppliers with printing instructions, each of said suppliers having at least one printing device, that enables printing of a shipping label in compliance with specific label standards of said customer, said method comprising the steps of:

providing said printing instructions specific to a selected supplier printing device over a communication link, wherein said print instructions are interpretable by said selected printing device to enable said selected printing device to print a plurality of first regions and a plurality of second regions, each of said first regions containing fixed indicia items and each of said second regions containing variable indicia items;

providing said variable indicia items associated with each of said second regions over said communication link; and

printing each of said fixed indicia associate with said first region and said variable indicia items associated with said second regions at said selected at least one printing device to provide a customer specific printed label.

2. The method as recited in Claim 1 wherein said printing instructions are textual.

3. The method as recited in Claim 1 wherein said communication link is the Internet.

4. The method as recited in Claim 1 wherein the step of printing further comprises the steps of:

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including said variable indicia items in said associated second regions;

placing each of said first regions and each of said variable indicia items associated with each of said second regions in a print queue associated with said selected printing device.

5. The method as recited in Claim 4 wherein placing each of said first regions and each of said variable data items associated with each of said second regions in a print queue causes said selected at least one printer to print each of said first region and each of said second regions without accessing the internal one printer driver software.

6. The method as recited in Claim 4 wherein said variable indicia includes information indicative of at least one item selected from the group of customer address, shipping content, number of containers, date of shipment, postage, container weight, shipping weight, purchase order number, supplier address, customer telephone number, supplier telephone number.

7. The method as recited in Claim 6 wherein said at least on variable indicia is presented graphically.

8. The method as recited in Claim 7 wherein said graphical presentation is a bar-code.

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9. A method of providing standardized label indicia by providing instructions on printing said indicia to at least one printing device over a communication network, said printing device capable of printing indicia according to specific instructions said method comprising the steps of:

providing said instructions to said printing device over said communication link, said instructions interpreted by said printing device to print at least one fixed information item of a first set of indicia;

providing at least one variable information item to said selected printing device over said communication network, wherein said at least one variable information item is associated with a variable item in said instructions to enable said printing to print indicia indicative of said variable item to cause said printer to provide a standardized label.

10. The method as recited in Claim 9 wherein said at least one fixed information item is representative of a line image.

11. The method as recited in Claim 10 wherein said line image is printed substantially horizontally.

12. The method as recited in Claim 10 wherein said line image is printed substantially vertically.

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13. The method as recited in Claim 9 wherein said at least one fixed information item is representative of textual data.

14. The method as recited in Claim 9 wherein said at least one variable information item is representative of textual data.

15. The method as recited in Claim 9 wherein said at least on variable information item is represented graphically.

16. The method as recited in Claim 15 wherein said graphic representation is a bar-code.

17. The method as recited in Claim 9 wherein said second data includes information indicative of at least one item selected from the group of customer address, shipping content, number of containers, date of shipment, postage, container weight, shipping weight, purchase order number, supplier address, customer telephone number, supplier telephone number.

BNSDOCID: <WO___0235505A2_I_>

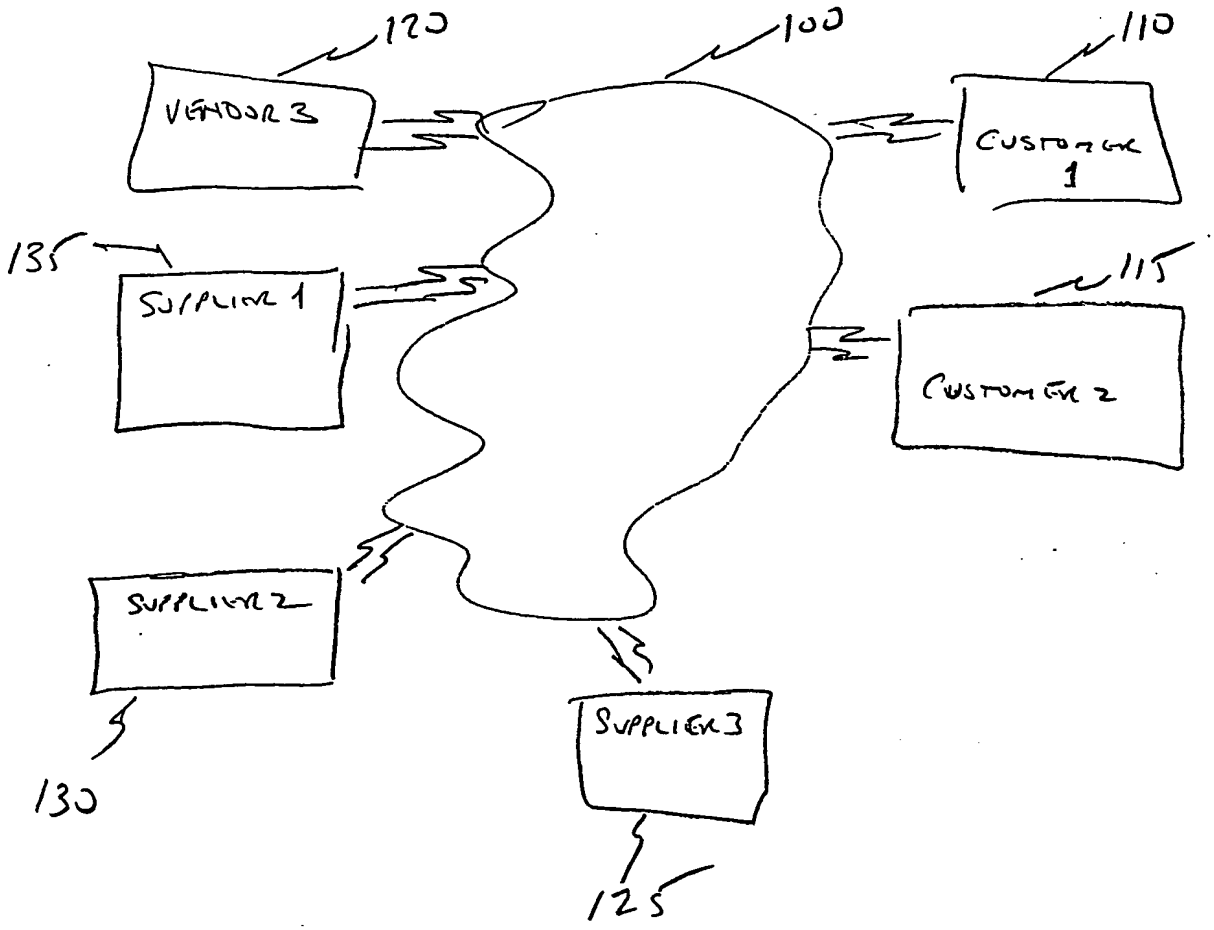

FIGURE 1

BNSDOCID: <WO___0235505A2_I_>

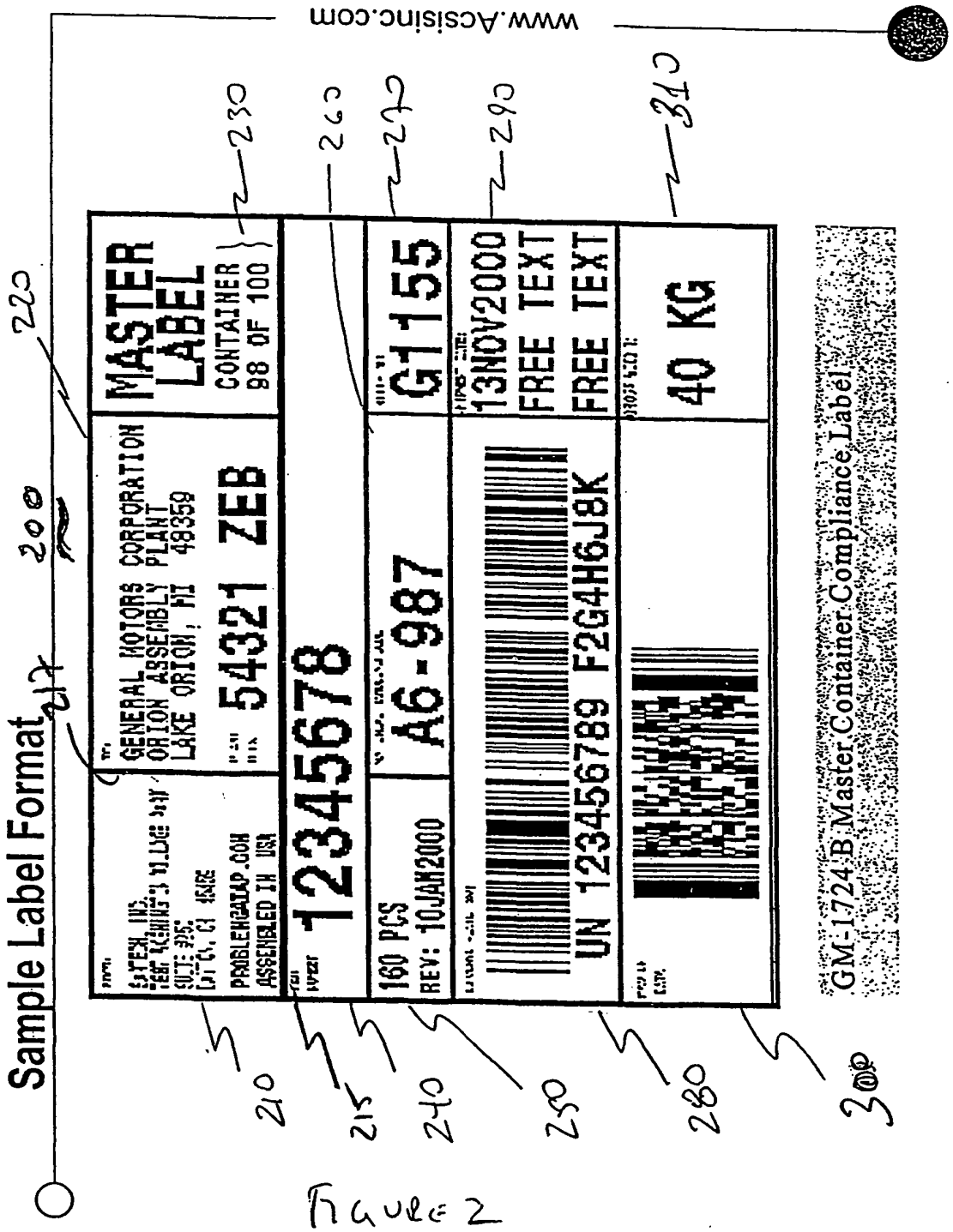

Figure 2

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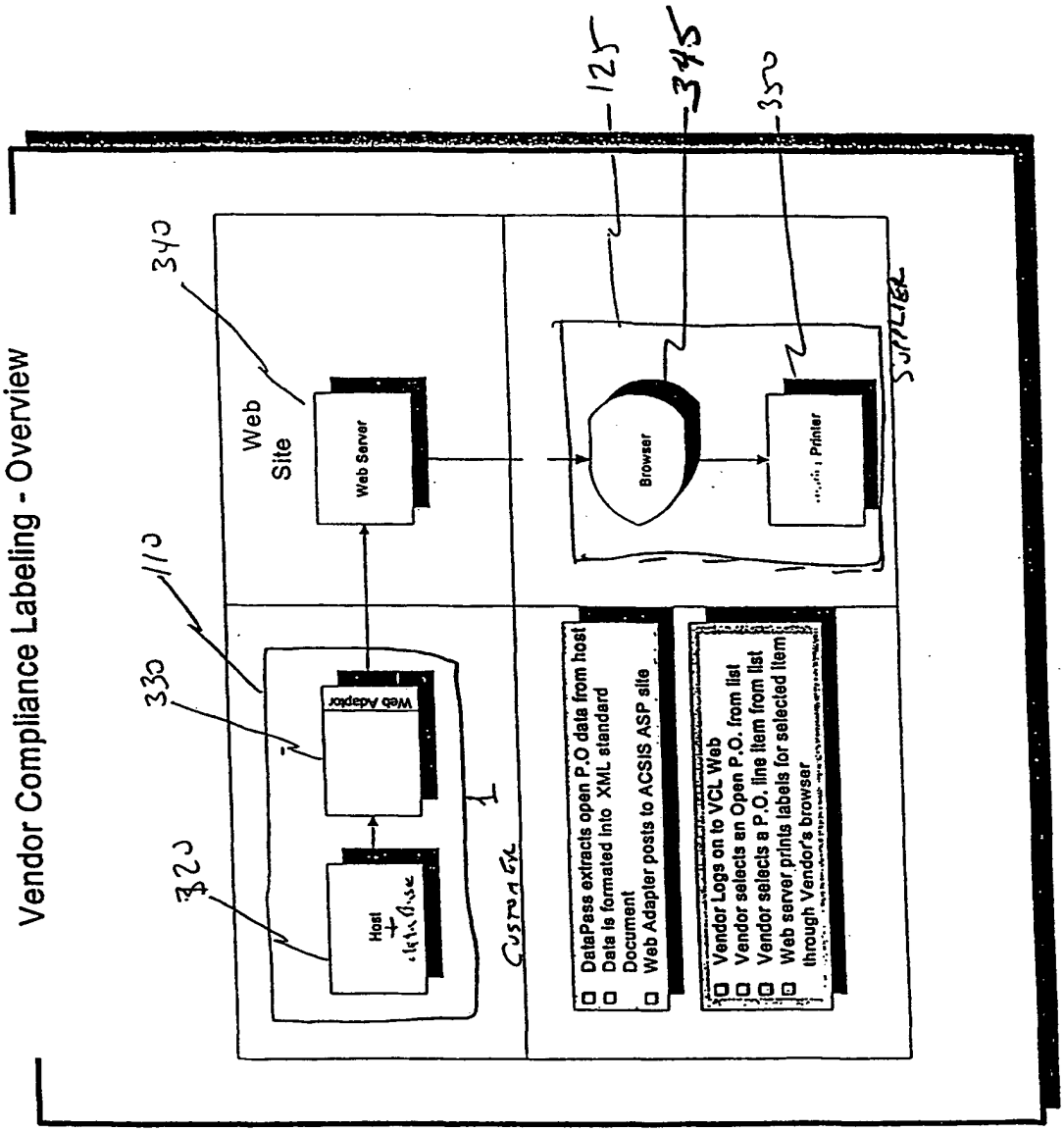

FIGURE 3

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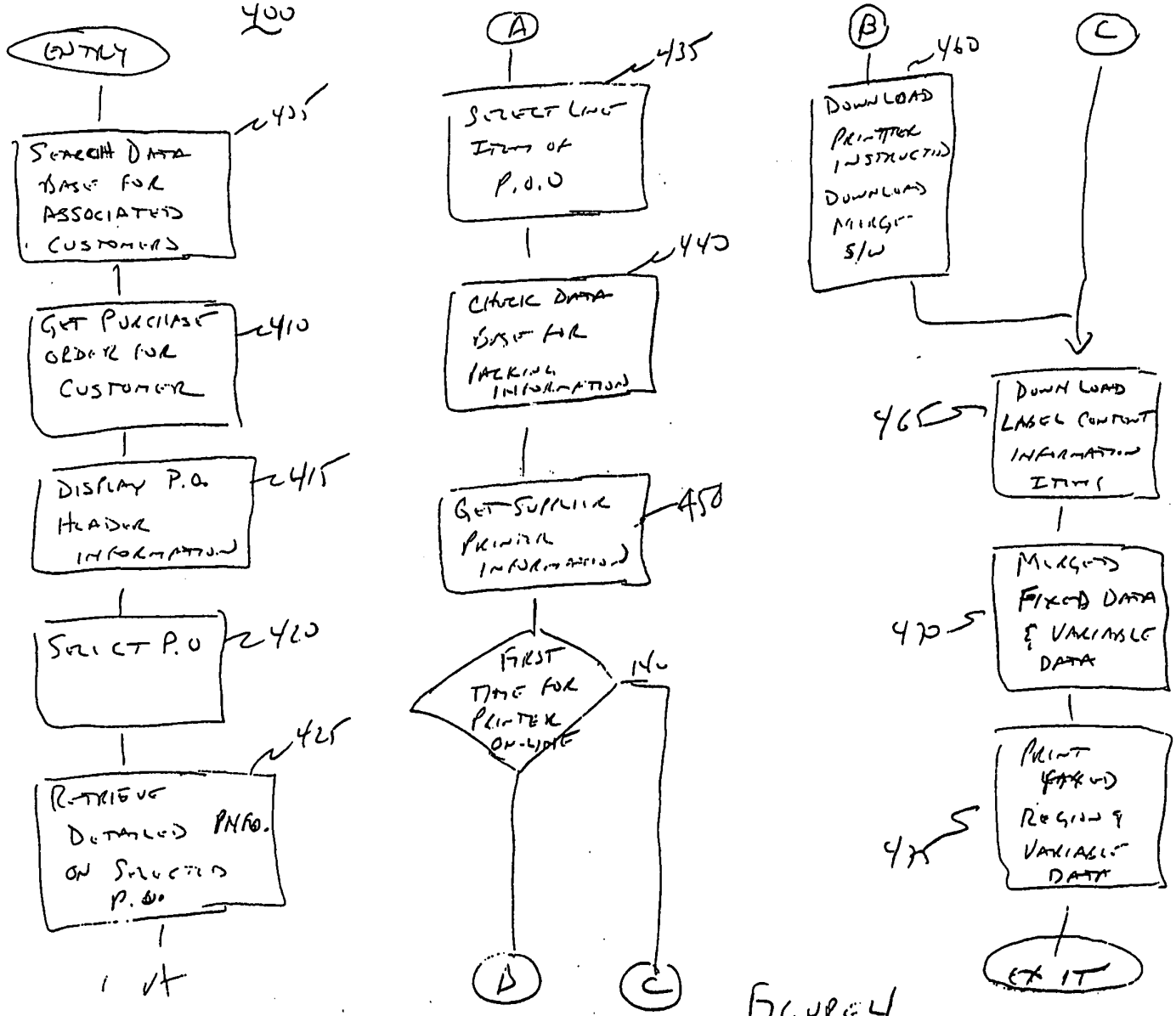

FIGURE 4

BNSDOCID: <WO__02355505A2_1_>

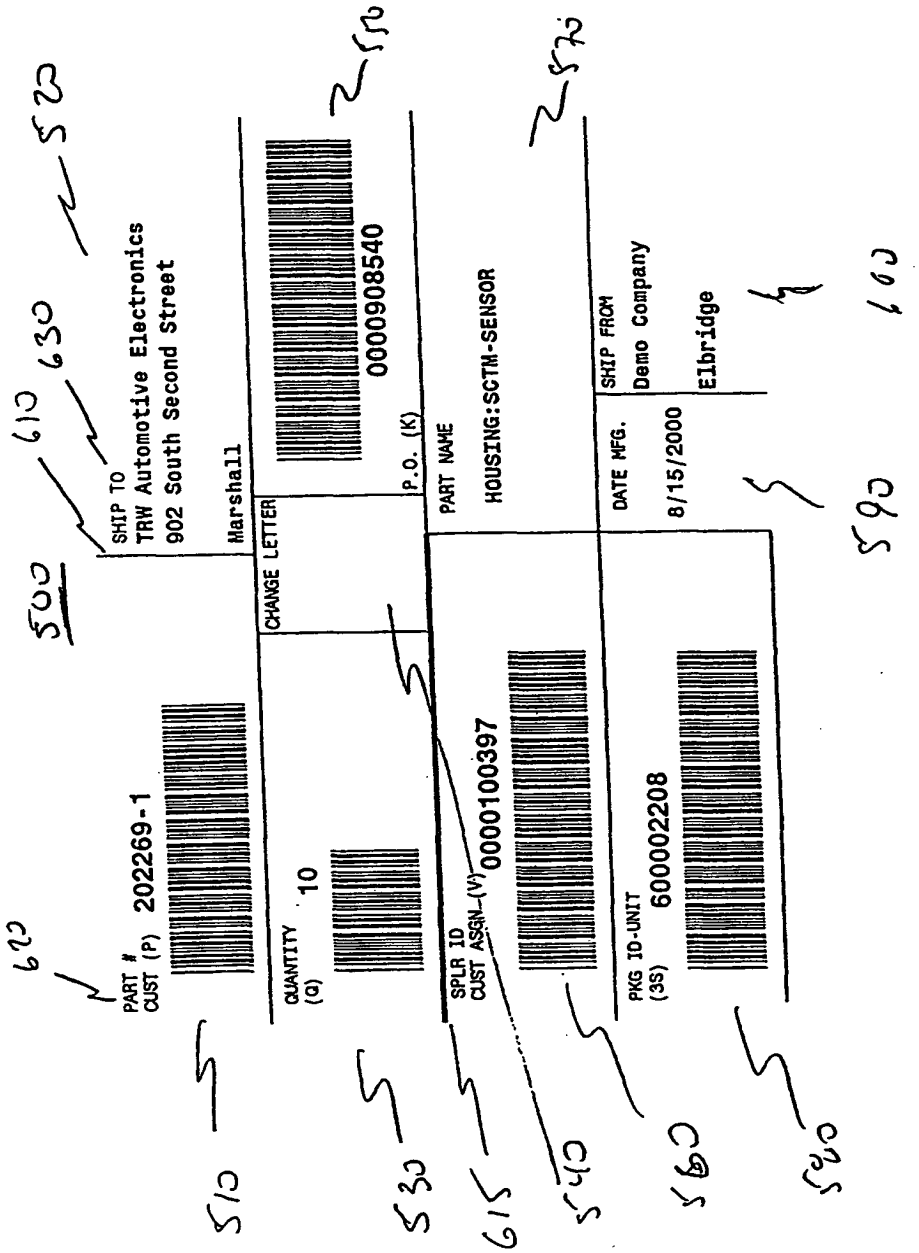

FIGURE 5

BNSDOCID: <WO___0235505A2_I_>